

ABSTRACT

- An slab CO₂ laser includes spaced-apart elongated slab electrodes. A lasing gas fills a discharge gap between the electrodes. An RF power supply is connected across the electrodes and sustains an electrical discharge in the lasing gas in the discharge gap.
- 5 Either one or two ceramic inserts occupy a portion of width of the electrodes and in contact with the electrodes. A discharge gap is formed between the portions of the width of the electrodes not occupied by the insert or inserts. Provision of the ceramic insert or inserts increases the resistance-capacitance (RC) time constant of the electrode impedance by increasing the capacitive component of the time constant. This hinders
- 10 the formation of arcs in the discharge, which, in turn enables the inventive laser to operate with higher excitation power or higher lasing-gas pressure than would be possible without the dielectric insert. The ceramic insert also decreases the difference in impedance of the electrodes with and without a discharge. This leads to a better-behaved discharge, and a discharge that is easier to light.